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Bovine Abdominal Surgery*

R. H. SMYTHE, M.R.C.V.S.,
NOTTINGHAM

I do not propose to read you a very scientific paper this afternoon but to discuss with you some of the abdominal operations which are practicable in bovines, not as they are set out in text-books but as they may be dealt with in the cowshed with reasonable hope of a successful termination.

The abdominal organs amenable to operative interference are the first, second and fourth stomachs, the large and small intestines and the uterus.

Time will only permit me to touch briefly upon each of these so I propose to deal with the broad outlines and answer your questions to the best of my ability afterwards.

The Rumen

Rumenotomy, or the operation of opening the rumen, may be carried out in a complete or modified form.

Complete rumenotomy consists in opening the rumen and removing a portion of the contents, or those of the reticulum, and it may be performed for any of the following reasons :—

(1) To extract *solid* ingesta. The substances which most frequently give rise to impaction of the rumen are coarse fibrous grass, sedges, excessive quantities of coarse unground grain and in normal times flaked maize. These are " dry " impactions. They do not give rise to a great deal of tympany and if gas is produced, it may be removed by the trocar and cannula.

(2) To remove semi-fluid or fermenting ingesta made up largely of frothy or gaseous admixture which does not pass readily through a cannula. The foodstuffs which give rise to this type of impaction are usually barley meal, beet pulp or brewer's grains and occasionally flaked maize, when taken in conjunction with large quantities of water. Such a condition is often associated with rapid intoxication and imminent danger of death. I have performed successful rumenotomy on as many as three cows in one shed which had broken into a bag of barley meal, being too late to save two others which died before my arrival.

(3) The removal of foreign bodies from the reticulum. This is a practicable operation if one makes an early diagnosis and is not afraid to chance the possibility of a mistaken diagnosis. In any case, the exploratory rumenotomy is justifiable, but although I have removed foreign bodies from the reticulum when symptoms had developed which made diagnosis certain, I have frequently found that the articles removed were not those involved, since another nail or piece of wire had already penetrated the stomach and entered the thorax prior to operation. It is remarkable that cows which die from traumatic pericarditis very frequently carry other metal objects in the reticulum. Wire is not a good risk from an operative standpoint but a nail with a large head or a well-defined bend may often be removed from the puncture in the reticular wall before it has done further damage, with every prospect of recovery.

(4) The removal of a thoracic choke. I have never attempted this operation and feel rather doubtful as to its efficacy, but I am assured on very good authority that, in certain circumstances, it is possible.

Modified rumenotomy is performed for the purpose of :—

(1) Removing persistent accumulations of gas from the first two stomachs, such as occur in mediastinal tuberculosis, when it is hoped to salvage the animal or improve its bodily condition. This operation is also very useful in half-grown calves which suffer from repeated attacks of tympany.

(2) For the purpose of feeding animals which are unable to swallow food, as in tetanus, injuries to the tongue or jaw, advanced actinobacillosis and in cases of thoracic choke when an animal may be kept alive for an indefinite period in the hope that a portion of root or a potato, otherwise immovable, may undergo a process of digestion or become sufficiently macerated to pass along the oesophagus.

The operation wound following a *complete rumenotomy* may be closed or it may be intentionally left open, to become a rumen fistula when early slaughter is intended, or it may be temporarily sutured with tape or short skewers. In those cases in which a rumen fistula has accidentally become established with adhesions between the rumen and the abdominal wall, it may be rendered less objectionable by the insertion of two circular pieces of rubber, cut from an old motor tube, joined at the centre by a rubber lace. One portion is inserted within the rumen and the other covers the external wound. This prevents the escape of ingesta and if the edges of the wound are occasionally freshened, brings about gradual healing.

More often, and preferably, the rumen is completely sutured. This applies always to those cases in which the impaction has consisted of dry ingesta without the formation of a frothy mass. It is the latter type of case which does not always permit of immediate suturing of the rumen wall as there is no certainty that gas formation has completely ceased.

The technique of rumenotomy is comparatively simple. It is performed with the animal in the standing position, using either a local anaesthetic or paravertebral anaesthesia. The best description of paravertebral anaesthesia is to be found in Wright's " Veterinary Anaesthesia," but for ordinary purposes, local infiltration using a 2½ or 5 per cent. solution of procaine along two lines forming a T, is quite efficient. The upper transverse line of the T runs above and at right angles to the proposed incision and the vertical line along it. It is advisable to make a second injection into the deeper layer adjoining the peritoneum after the skin has been incised.

The site of operation is the triangle formed by the last rib, the transverse lumbar processes and the tuber coxae. The hocks are lightly tied, the area is clipped, washed and anaesthetised and if tympany is present, as much gas as is possible may be removed with a medium bore trocar prior to operation. Rumenotomy cannot be regarded as an aseptic operation but it can be made less unpleasant if receptacles or a wheelbarrow are available to collect the extracted material instead of allowing it to drop underfoot.

The instruments required are a sharp scalpel for incising the skin, peritoneum and rumen ; a wire hook which is by far the best implement for pulling out coarse fibrous material, and several four- or five-inch, very sharp, needles threaded with soft flax cord. These should be half or three-quarter curve and a needle holder or forceps should be provided to help pull them through the tough skin. This is the most difficult part of the operation. A small tea-towel should be at hand to insert partially into the rumen. This covers the lower end of the incision and prevents leakage of fluids into the peritoneal cavity.

The length of the incision depends upon the object for which the operation is being performed. For the removal of stomach contents, when it is intended subsequently to suture the rumen wall, it is essential that the skin incision should be at least 2 inches longer than the incision subsequently to be made in the rumen. This permits the skin wound to be stretched laterally before suturing it to the stomach wall after the rumen has been drawn out through the wound. By this means sufficient of the rumen wall is left lying freely within the abdominal incision to permit of satisfactory suturing. It must be remembered that the incision into the rumen must be sufficiently long not only to admit the passage of the arm and the open hand but also to permit the return of the closed fist and its possible contents, several times, freely, and without causing undue friction on the operator's arm. The lining of the rumen is rough and will soon damage the skin of the operator's arm if the aperture is too small for comfort. The average length of the incision in the rumen wall is 5½ inches so that the skin incision may well be 8 inches in length. There is no disadvantage in a long incision, which will heal quite as quickly as a smaller one, with little subsequent indication of its previous presence.

After the skin has been incised the muscles are divided in the direction of their fibres by first nicking them with the knife and then inserting the first finger of each hand into the cut and pulling in opposite directions. The panniculus is usually cut through with the skin but the fibres of the deep muscles run almost at right angles to each other so that the resulting muscle wounds tend to close themselves. Beneath these, the peritoneum will appear—a comparatively thick grey glistening membrane. It may at first be confused with the rumen wall but can be distinguished as the latter is pink and vascular and freely movable. The peritoneum is divided by a straight incision, when the rumen, if at all tympanitic, will bulge into the wound. Care must be taken not to incise the rumen at the same time as the peritoneum and for security a grooved director inserted through the peritoneum before introducing the point of the scalpel will facilitate matters.

It is now necessary to draw a portion of the rumen a short distance into the wound before suturing it to the muscles and skin and if

* Presented to the Lincolnshire and District Division, N.V.M.A., at Grantham, December 16th, 1943.

much gas is present it may first be tapped with a fine trocar. I find it convenient to grasp the wall with the vulsellum forceps such as we use for holding the cervix in sterility operations and ask an assistant, preferably a tall man, to draw gently upon it. Suturing then commences. Using a large well-curved needle, threaded with soft flax cord, commence at the upper extremity of the skin incision. Push the needle through the rumen wall into the stomach, bring it out an inch or an inch and a half higher up, then pass it through the peritoneum, muscles and skin. You may need to grasp the point as it emerges, with forceps to draw it through, being careful not to break the needle. Repeat the operation at the lower end of the incision.

Now, draw out a little more of the rumen with the help of the vulsellum forceps, pull the skin and muscles laterally to dilate the wound as far as possible and insert three similar sutures at intervals on either side. The rumen will now be bulging well out of the wound and will be firmly attached to its edges. The incision in the rumen must commence 1 inch below the upper end of the exposed portion and terminate 1 inch above the lower end. This facilitates suturing later. It is advisable to stand as close as possible to the animal's shoulder whilst making the incision as when fermenting fluid is present it may shoot several feet through the wound.

The tea-towel may next be inserted on the floor of the wound, with one end inside the rumen. If the contents are fluid and frothy, a pumping movement of the fist in the flank will remove a gallon or so of the contents, after which the hand may be introduced and the underlying solids removed.

In such cases I introduce the rubber stomach tube and pump in 4 to 6 gallons of fairly warm salt and water with the addition of a little formalin, allowing the overflow to pass out through the wound.

It is never advisable completely to empty the stomachs but the hand may well travel over the floor of the reticulum and remove any foreign bodies present. Some will very frequently be found, although they may yet have caused no damage. When the ingesta consists of fibrous material, a stout wire, 2 feet in length, with a hook bent on to the end, is the best implement for breaking up and removing the mass. In the latter case, after extraction of sufficient of the contents, the rumen is closed by turning in the edges and suturing the incision by one or two rows of a continuous Lembert suture.

I find white sewing thread and an ordinary darning needle most convenient for this purpose. The operation area should now be swabbed out with weak dettol. The stitches holding the rumen to the body wall may then be all cut and removed and the skin incision closed by four or five tape sutures.

It is not necessary to include the muscles or peritoneum if a button hole incision made by tearing through the muscles has been utilised. This method obviates extensive adhesions between the rumen and the body wall. However, when considerable frothy fermentation is present and liable to recur it is unwise to free the rumen and in this case the sutures holding the rumen to the incision and wound are left in place. The stomach wall may be closed at the top, leaving a space 1 inch in length at the lower end for passage of gases, and the skin may be closed for the same distance. Alternatively, the skin wound may be left open for 48 hours when the remainder of the rumen incision wound may be completely closed and the skin wound sutured over it, in this case leaving out the lowest skin suture to permit of drainage. Extensive adhesions will occur between the rumen and the body wall but these will have no visible effect upon the subsequent health of the animal. In "*modified rumenotomy*" for the relief of chronic tympany or for feeding purposes, the skin incision need only be 2 inches in length. The rumen is fixed with one suture at either end of the incision wound and one at either side. An opening an inch in length is subsequently made in the rumen and the attendant is instructed to pass the handle of a dessert spoon through the hole once daily to prevent it from closing. For feeding purposes, a tracheotomy tube may be inserted in the wound and the food material pumped in from a pail or poured in through a funnel. Operation on the *abomasum* in calves may be indicated for the removal of curds or fibrous material. I am not sure that, as an operation, it is often *really* necessary, but it is easy and the calf shows no ill effects. The patient is laid on a table on its left side. After the usual preparation, chloroform is administered and an incision 4 to 5 inches long is made a little to the right of the midline following the ends of the last four right-hand costal cartilages. The fourth stomach lies directly below the incision. It is brought out of the wound, packed round with boiled towels and incised for a short distance along its upper curvature. The offending material is extracted and the incision in the stomach is closed with a continuous thread suture, then turned in, and a second row of interrupted sutures inserted. The stomach is washed with warm normal saline solution before returning it. The skin wound is best closed by one layer of closely applied silkworm gut sutures passing through skin, muscle and peritoneum. A roller towel should be bound tightly around the abdomen after the calf has regained its feet. I have yet to see the abomasum of a normal dead calf which did not contain either milk curds or masses of fibrous material and I shall be glad to have the observations of members on this point.

Operation on the Bovine Intestine

It may be that in Cornwall, where cows jump off high banks from one field to another, volvulus is more common than in the Midlands. I have not encountered a case here, during my nine months' residence, but I have operated successfully on as many as seven cases in three months in my own county.

Laparotomies in cattle are carried out in cases of:—

(1) Volvulus or strangulation of a portion of intestine (usually small intestine) which, in most cases, has passed through a tear in the adjoining mesentery.

(2) Strangulation of a loop of bowel, due to encirclement by an adventitious fibrous band derived usually from the omentum or sometimes from the mesentery, *or* to passage of a loop of bowel between the abdominal wall and a similar adventitious band which has become adherent to the wall.

(3) Strangulation of a loop of bowel in a castrated animal. The bowel may be adherent to the end of the spermatic cord which in the process of time has contracted and drawn the bowel out of place, or the end of the cord may have formed an adhesion within the pelvis and a loop of bowel may have passed between it and the pelvic wall. I do not think that this condition of "gut-tie" is so common as is imagined. I have only diagnosed it twice in 34 years' practice.

(4) Laparotomy may occasionally reveal foreign bodies transfixing the intestine. I have successfully removed a piece of iron wire which had "riveted" a cow's duodenum and one of my assistants removed a similar but much longer piece which had passed through the colon and partially into the gravid uterus.

(5) Lastly, laparotomy is of value in cases of intussusception, occurring usually in the small intestine.

Diagnosis.—Before considering operation, a reasonably correct diagnosis is of some importance, although the bovine peritoneum is so extremely resistant and cattle withstand severe abdominal operations so remarkably well that one need never be afraid of attempting an exploratory laparotomy. I have frequently observed in cases of prolonged bowel stasis, particularly in those cases occurring in wintry weather, that when abdominal exploration has revealed no displacement or obstruction, the act of handling the bowels and intentionally massaging them, within the abdomen, has resulted some six hours later in restoration of function and the appearance of copious evacuations, even after all medicinal treatments have failed.

It must always be borne in mind that some of these cold weather cases of bowel atony, with suppression of defaecation, and those in which loud splashing noises can be produced by palpating or "knocking" the right flank in the caecal region, may actually be cases of strangulation of the caecum or other part of the bowel, so that exploratory laparotomy is quite justifiable.

In my own county, farmers became so impressed with the good results following operation that they demanded it too frequently, often before I desired to venture.

I would like to point out to you that, surprising as it may seem to those who have had no experience of bovine laparotomy, the risks are almost negligible and operation is within the scope of every practitioner. I can only remember two deaths in cases which were not too advanced when encountered. One of these died during the operation from vomiting and passage of ingesta down the trachea; in the second case I ruptured the distended caecum whilst trying to effect reposition. Apart from these, I have operated successfully on over 50 cases of strangulation and on three out of four cases of intussusception, requiring resection of bowel. The fourth case did well for nine weeks, then died from stenosis of the bowel at the point of union. I am telling you this, not to delude you into the belief that I am a good surgeon but to impress upon you that the bovine peritoneum is proof against anything but gross infection; that each of you should discard your useless salts and aloes when cases of this type arise and that you will not be disappointed if you try more heroic measures. Successful bovine laparotomy can be carried out under farmyard conditions, by every practitioner who will take the trouble to do so. Any case of bowel stasis, especially if accompanied by pain, should be viewed with suspicion, if it does not respond to simple treatment within 18 hours. I have found the safest and most reliable early treatment of these cases is the slow injection of 1½ lb. of common salt in two gallons of warm water through the stomach tube, passed through the mouth using a wooden probang gag. Salts and aloes increase auto-intoxication and depression in cases where they are retained and not eliminated.

A cow suffering from intussusception shows early signs of acute colic. Pain diminishes after 24 hours but is quickly followed by prostration and collapse. Very occasionally, cases recover with passage of the necrosed portion of bowel. During the painful stage the cow kicks at her belly and frequently lies down. When standing,

between spells of pain, she invariably stands back on her chain with her hind feet in the gutter, stretched well out behind her. At first, a few faeces may be found in the rectum but if rectal exploration is carried out twelve hours later, the hand and arm, when withdrawn, will be coated with a glue-like, blood-stained mucus, very difficult to wash off. Ropes of the same material may subsequently pass through the anus. Text-books tell you that you should be able to palpate per rectum a large sausage-shaped mass in the abdomen, but this is not correct. The bovine intestines, with the exception of the caecum and sometimes the terminal portion of the colon, which may be intra-pelvic, are beyond reach of the hand and arm.

There is, however, something which may be felt in many cases of bowel displacement, which gives the clue and calls for immediate operation. This is the presence of a tightly stretched cord, varying in thickness from that of a man's arm to a simple tape-like band, extending from the mid-line of the body to a destination beyond reach. This tense cord consists of tightly twisted and conglomerated mesentery, which has been pulled together by bowel displacement. The larger masses usually indicate intussusception when the portion of mesentery normally attached to 18 inches of telescoped bowel has been drawn into the invagination. The smaller tape-like bands, which can be hooked with the finger and drawn backwards towards the pelvis, usually indicate simple volvulus or strangulation. Occasionally, they can be ruptured per rectum. In the latter condition, when a loop of bowel has passed through a rent in the mesentery, there may be no acute pain but the animal stands stretched out, with the hind limbs well back, and is disinclined to move. There is usually grinding of the teeth and grunting when moved over in the stall. Some of these cases persist for many days without much change, although there is complete absence of bowel movement. Blood in the rectum is only present in cases where the strangulation is tense.

I have operated successfully on a cow, nine days after she had contracted a strangulation through falling over a cliff. Bowel movement commenced six hours later. It is unwise, however, to defer operation for longer than is necessary, once suspicion is aroused.

One will need chloroform apparatus, clippers, casting ropes and a sack of straw upon which to raise the head. This last item is very important when administering general anaesthetics to cattle. Instruments include two scalpels, long curved needles threaded with flax cord, one threaded with catgut and several medium-sized darning needles, threaded with white sewing thread. A couple of towels, provided if possible with towel clips, are used to cover the operation area. Some artery forceps and scissors, a small pair of vulsellum forceps to assist in picking up and suturing the peritoneum and some lengths of tape and stout silk for ligating bowel and mesentery. Personally, I also inject procaine solution at the site of operation in order that general anaesthesia need not be pushed too deeply.

Two pails of dettol solution should be at hand, one with soap and a nail brush, the other for rinsing at intervals throughout the operation.

All the instruments are boiled and taken to the farm in a large fish kettle. The tapes, threaded needles and swabs are placed in perforated tins before boiling, as this prevents suture materials becoming entangled with instruments. There are two sites suitable for operation. One is the triangular area between the last rib, lumbar processes and tuber coxae, as for rumenotomy, but on the right side instead of the left. The other site (and for some reasons the best site) is the right flank immediately in front of the stifle. The area chosen should be clipped and the incision area marked out with the points of scissors before casting. The position of the skin is apt to vary somewhat when the animal is down. The casting is done by Reuff's method, with the cow on her left side. The upper hind limb is roped, drawn backwards and tied to a post, and the other three feet are tied together. The horns are roped to some firm object. Chloroform is administered whilst the operator scrubs the parts and cleans his own hands and arms. A waterproof apron is advisable.

If operating at the higher site, the incision should be 6 inches in length and is made as described under rumenotomy. At the lower site, the incision is oblique, running from above downwards, with the upper end sloping forwards in order that the subsequent wound may not be disturbed by stifle movements. At this site, the skin is incised, the muscles torn through and the peritoneum divided with the scalpel. The hand, when first introduced, comes upon a thick layer of omentum. This is drawn through the wound and incised. The arm is pushed through the aperture. The omentum then clings around the arm and serves to prevent bowel being protruded through the operation wound. After a general exploration, an attempt is made to find the taut portion of mesentery and when discovered, this, together with the attached portion of bowel, is drawn carefully through the wound, laid upon a boiled towel and examined. It may be necessary to enlarge the wound in the upward direction if the portion of bowel involved is extensive. Sometimes the loop of strangulated bowel can be felt passing through a mesenteric tear. It can be lifted out without removing the hand from the abdomen. The mesentery should then be brought to the incision and the rent sutured with thread, or if the strangulation is caused by an adventitious band, this should be divided. The peritoneum is closed with a catgut suture, including the deep layer of muscles. The skin and superficial muscles are united by tape or flax sutures. In the upper site, only the skin need be drawn together. The lower position gives better approach and requires less traction on the mesentery. Healing is rapid and usually occurs by first intention. If an intussusception is found, the whole mass should be drawn out of the wound on to a towel. An attempt may be made to reduce it by squeezing the mass with a "milking" movement, but never by traction on the ends. The attempt will be unsuccessful if the condition has been present for many hours and bowel resection then offers a good prospect of recovery.

The mesenteric mass attached to the incarcerated bowel is tied off with one tape or cord and the bowel is similarly ligatured with tape behind and in front of each point of division. The mass is then incised, cutting first through the mesentery, then through the bowel. Discard the soiled knife and do not put it back into the steriliser. Remove the incised tissues. Pass the afferent end of the bowel 1 inch into the efferent portion, *making sure that its mesentery remains intact*. Suture the two portions of bowel around their periphery using a continuous Lembert suture. Roll the efferent portion back a little on the afferent portion and insert a second layer. Do not forget to remove the tape ligature before replacing the bowel. After rinsing with weak dettol solution, push it gently back into the abdomen and suture the wound. If the animal is not in a state of collapse before operation, the prospect of recovery is very good. On the following day the cow usually develops a ravenous appetite, but diet should be restricted to gruels, pulped roots and bran for the first few days. This abnormal appetite has been a post-operative feature in all my cases.

Uterine Operations

Time will not permit me to discuss Caesarean section in detail, other than to say it is an easy and successful operation in any case where there has been little or no previous manual manipulation within the uterus and where the calf is fresh or living.

The few cases I have attempted have all survived. They included one cow which contained a monstrosity. This cow was turned out on the following day by the farmer, fought another cow and burst some stitches. She was given no further attention and made an uneventful recovery. The next time I saw her she was on another farm, in calf, and I suspect she calved uneventfully. Ventral hernia may appear after healing is complete in some cases.

I have removed mummified calves which refused to respond to stilboestrol or other approved methods of treatment but I have no record of whether these cows calved successfully afterwards.

The best site for incision, I find, is in the right flank, using an oblique incision as described under strangulation of the intestines, but the cut must be carried further in the upward direction, at least 15 inches in all. The membranes must be removed at the time if possible. Suturing the uterus, provided it is not septic, appears of little consequence. It contracts so rapidly whilst you are attempting to close it that sutures cannot provide much support. I usually inject pituitrin to aid this process. The most difficult part of the operation is the extrication of the calf through the incision.

Many American surgeons who habitually perform Caesarean sections on Boston terriers a day or so before the date of normal parturition do not suture the uterus at all. The biggest danger is hernia of bowel into the large external wound. It is essential to suture the peritoneum separately with catgut and the skin and muscles in one layer with tape, or, with small skewers and figure of eight ligatures.

The only other operation I will mention is laparotomy in those cases of uterine torsion which cannot be otherwise reduced. It has helped on several occasions but is of no value when a multiple twist with firm adhesions exists.

Discussion

Mr. G. Eaton, who opened the discussion, thanked Mr. Smythe for his masterly contribution, and described him as a bold and capable surgeon. He had seen numerous recoveries in suspected traumatic pericarditis when cows were "put on the boards." He enquired as to the length of time required for union of bowel in cases of resection, also as to the use of Murphy's button.

Mr. R. Hudson expressed the difficulty of diagnosis and of locating the affected portion of bowel at operation. He described a successful caesarean section in the cow and stressed the advisability of operating only on those cases which showed no signs of sepsis, and no injuries from attempts to remove the calf in the ordinary manner. He remarked upon the difficulty he had experienced in withdrawing the calf through the operation wound.

Discussing operations on the abomasum, he thought that when a calf showed fits the case required to be dealt with surgically.

Mr. W. W. Lang also expressed his appreciation of Mr. Smythe's lecture, and stated that he believed that fits in calves were more likely to be the result of a toxaemia arising from the abomasum and not simply from the presence of clots or a foreign body, and that medicinal treatment was often successful.

Mr. P. E. Emson frequently encountered impaction of the rumen in cattle, with marked fermentation through the overfeeding of potatoes.

Mr. K. D. Downham asked Mr. Smythe's views on intravenous choral hydrate anaesthesia. He had also been interested in the frequent occurrence of tympany in cattle from the rapid fermentation of grasses, etc., from re-seeded pasture.

(Concluded at foot of col. 1, p. 64)

CLINICAL COMMUNICATION

Poisoning of Cattle through the use of Nicotine and Lime Dressing for Warbles

R. E. McGRATH, M.R.C.V.S.,
and
DONALD CAMPBELL, M.R.C.V.S.

The occurrence here recorded took place in May, 1943, but with the approach of the warble season again it is thought that the present account may not be inappropriate.

Only one of the writers (R. E. M.) saw the animals alive; the other was consulted by the firm who supplied the nicotine solution. The *post-mortem* examinations were made jointly by the two veterinary surgeons, with representatives of the parties concerned also attending.

The dressing was in accordance with the formula prescribed by the Ministry of Agriculture: nicotine sulphate 40 per cent., two ounces, hydrated lime one pound, water one gallon. Actually the quantities as made up were estimated, not measured. The owner of the cattle had a quantity of slaked lime, thoroughly soaked, of which he put a double handful into a pail, then he added what he judged would be a gallon of water, and finally, and fairly accurately, two ounces of the nicotine solution.

Twenty-four cattle in all were dressed over the back with this mixture, although only four were visibly affected with warbles. Very soon afterwards practically all the animals showed signs of illness in greater or less degree, and three of them died at intervals of three-quarters of an hour, one hour, and one hour and a quarter respectively after being dressed. It is noteworthy that these were three of the four which had warble swellings on the back, a fact which would suggest that absorption of the poison had been chiefly through the warble openings. The other animals subsequently recovered.

Clinical Report (R. E. M.)

"On the evening of May 2nd, 1943, at 6.30, I was called out to attend cows which had been dressed for warbles. When I arrived at 7 o'clock two animals had died, and I was given the following history by the farmer.

An advertised nicotine sulphate 40 per cent. solution was used. The dressing was commenced at 6.15, and all the animals were dressed by 6.30, at which time symptoms were shown. After 'phoning me the farmer washed the animals with a solution of washing soda.

Another animal died a few minutes after my arrival, and the symptoms shown by the others were: movement of hind feet as in milk fever, salivation, scouring, temperature of two animals taken was normal; marked contraction of the pupil. (According to the farmer at 6.30 the eyes appeared greatly enlarged and bulging.) Three animals were down and one was comatose.

Treatment.—Each animal was drenched with tannic acid, one level tablespoonful in one pint of treacle water. As there were so many to drench there was no time to weigh the tannic acid. Two of the stirks were unable to swallow, and were drenched with the stomach tube. The one which was comatose had improved 15 minutes later, and was given a calcium injection, half intravenously and half subcutaneously. Six calves were given, in addition to the tannic acid, 10 c.c. camphor and ether in oil. The farmer was instructed to drench all the animals with half to one pound of treacle at 10 o'clock, and to give a stimulating powder of ammonium carbonate and nux vomica in milk the next morning at 6.30 and again at 9 o'clock.

Within one hour of being drenched all showed improvement. One stirk did not rise till the following morning, and did not recover completely for a week. The others were normal in two days."

Post-mortem examinations were made on the three animals which died.

(1) F.1, a three-year-old cow, near calving, which had died one and a quarter hours after dressing. When the skin was removed six warble larvae were found. The most notable feature seen was a remarkable paleness of the carcase, giving it almost the appearance of a beast which had been bled. There was also some reddish coloration of the rumen, but nothing else of note.

(2) H.3, a heifer 14 months old, had died three-quarters of an hour after the application of the dressing. In the hide were 13 warble larvae and one warble hole from which a larva had apparently been squeezed. Here again the anaemic appearance of the carcase was notable, and the lungs seemed unusually pale.

(3) H.2, another heifer, 14 months old, which had died one hour after being dressed. A number of warble larvae were found in the connective tissue of the back. The flesh was very pale.

Taking the *post-mortem* examinations in general, the only constant and striking feature was this anaemic appearance of the carcases, due, perhaps, to the special action of nicotine on the sympathetic nervous system.

From each carcase a number of samples were taken, some of which were submitted to analysis. The analysts' report on these, and on samples of the nicotine solution and lime which had been used are given below.

From R. R. Tatlock & Thomson, Analytical Chemists, 156-160, Bath Street, Glasgow, C.2. *May 14th*, 1943.

No. 1. "Report on three samples of viscera received on the 5th inst. from Donald Campbell, Esq., M.R.C.V.S., Rutherglen.

Labels.—Stirk H.2. Piece of abomasum, piece of back muscle, piece of liver, and piece of kidney.

Stirk H.3. Back muscle, liver, kidney.

Heifer F.1. Contents of abomasum (fourth stomach).

We have made a careful chemical examination of the samples and each showed traces of nicotine to be present. The amount was very small, the nearest estimate we could make being one part of nicotine per million in samples H.2 and H.3, and not more than one-half this quantity in F.1. One part per million is equal to 0·007 grain per pound."

No. 2. "Report on a sample of nicotine sulphate and on a sample of slaked lime received on the 8th inst., used when making dressing for killing warble maggots, in proportion of a double handful of lime, two fluid ounces of nicotine sulphate, and made up to about one gallon with water.

Analysis of Nicotine Sulphate	*Pet cent. by Weight*
Nicotine...	42·5
Analysis of Slaked Lime	
Calcium hydroxide (slaked lime) ...	31·7
Carbonate of lime	8·0
Water	58·7

In the formula recommended by the Ministry of Agriculture, we are not clear as to the intended function of the slaked lime. If it is simply to liberate the nicotine from nicotine sulphate, then the quantity of one pound to one gallon seems grossly excessive. On the other hand this large amount of lime may be for some other purpose unknown to us.

By trial we find that the quantity of dry powdered slaked lime which could be taken up by two hands held together is from three to four ounces, but the same quantity of the slaked lime in question, since it is in the form of a slurry, would weigh more than this.

Experiment showed that when one part of the nicotine sulphate is mixed with two parts of the lime slurry, and allowed to stand for 10 to 15 minutes, practically the whole of the nicotine is set free. In consequence we think it unlikely that the lime used in the present case, although considerably less than that demanded by the formula, played any part in the unfortunate results obtained."

Report (D. C.) to the Firm supplying the Nicotine Sulphate Solution

"I refer to your letter of May 19th, enclosing copy of the analysts' report on the suspected poisoning of cattle from the use of a wash containing nicotine.

The amounts of nicotine revealed by the analysis seem almost incalculably small, and I feel somewhat hesitant about giving a definite opinion on the toxicity of such small amounts. I have no personal experience of a case quite similar to this, and literature on the subject is rather scanty.

For horses and cattle the toxic dose of nicotine is usually stated to be from 5 to 7 minims by the mouth, and one observer (Lander's Veterinary Toxicology) gives the subcutaneous dose as about one-tenth of these amounts. As in other poisons, absorption from

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The Reply

Mr. Smythe, replying to the points raised in discussion, said that he believed that penetration of the reticulum had occurred in most cases before diagnosis was made and unless a nail with a large head was the cause, placing the cow "on boards" would make no difference. He suspected that in many of the apparent recoveries the diagnosis may have been at fault. After resection, a plastic union would take place in 12 hours and a firm union within 36 hours. He based his estimate on observations made upon small animals which, unfortunately, sometimes died! He believed that fits in calves were caused by an entero-toxaemia, sometimes associated with a calcium-magnesium deficiency. Injection of salts of calcium and magnesium often effected a cure. He did not advocate intravenous chloral hydrate anaesthesia in cattle, which sometimes exhibited idiosyncrasy. There was also risk of leakage and sloughing and the animal needed controlling for some hours afterwards. He attributed the frequent cases of tympany on new leys to the predominance of fresh-growing grass without sufficient dilution with fibrous material. Manuring might also play a part.

He had no practical experience of the Murphy button, but some help in suturing could be obtained by inserting a cylinder of "cored" apple into the ends of the bowel. Actually such aids were unnecessary.

He wished again to draw attention to the main purpose of his paper, which was to demonstrate that cattle were remarkably resistant to abdominal interference and that no practitioner need hesitate to operate whenever the diagnosis justified it.

unbroken skin is probably slight, but from broken skin Lander, speaking of poisons in general, says that absorption approximates to subcutaneous injection. In the case under review it seems likely that the major portion of the nicotine was absorbed through the warble openings in the skin rather than by the animals licking. The quantity, therefore, need not be large, and I understand, though this is not my province, that analysts regard the presence of nicotine at all, however small the amount, as significant.

Cases are recorded of horses being poisoned by the application to the skin of a ' 5 per cent. strong tobacco juice content.' This reference may not have much value, since to my mind the phrase ' tobacco juice content ' lacks precision.

Miller's Veterinary Dictionary, speaking of nicotine washes, says, 'Great care is needed in the preparation of the solution, for if the concentration of nicotine in the resulting decoction be greater than one part in 160 of water, fatal results may occur.' One part in 160 is equal to one ounce in a gallon, and if Miller is speaking of pure nicotine and not of a salt such as nicotine sulphate, the strength he mentions would perhaps not differ materially from 40 per cent. nicotine sulphate at two ounces per gallon. Any slight difference in strength would be met by the ready facility for absorption provided by the openings in the skin due to the presence of warbles.

The *post-mortem* appearances of the three cattle were in my mind consistent with nicotine poisoning.

Taking all these circumstances into consideration I can only conclude that the death of these animals was due to the nicotine wash."

. . . . . .

Although this note has emphasised the importance of the warble openings as a route for absorption of the poison, it must not be overlooked that of the 24 cattle which were dressed only four appeared to harbour warbles. In the others absorption must have been either through the unbroken skin or by the animals licking. Considering the number affected and the short interval between dressing and the appearance of symptoms, licking so prompt and unanimous as it would have to be can be ruled out. Besides, it would not have been allowed to go unchecked. Absorption through unbroken skin, however, must be admitted. It is suggested that when nicotine dressing is used the danger would be diminished by squeezing a little into each warble hole only, instead of washing over the back.

ABSTRACTS

[**A Study of the Antibody Response of Cattle to** *Trichomonas foetus*. Kerr, W. R., and Robertson, M. (1943.) *J. comp. Path.* **53**. 280-297. (2 tables, 11 refs.).]

Sera of newly born calves of normal mothers contain no agglutinins for *Tr. foetus* but as time goes on the agglutinin content of the blood increases until about the fourth or sixth month when the normal adult titre is reached. All normal cattle show a distinct agglutination titre for *Tr. foetus*. Many infected animals show a titre which is appreciably higher than the normal level but many do not and in this paper the authors record experiments planned to try to account for this difference.

The experiments fell into two groups (I) the artificial infection of heifers and cows with *Tr. foetus* and (II) the instillation into the uterus of non-gravid cows of a sterile saline extract of the Trichomonas.

The results of the first experiment showed that in low grade vaginal infections no appreciable increase in the agglutination titre occurs. But if the protozoan is injected into the uterus some blood response occurs comparable to those found in field cases, but even in these animals the change may not be appreciable. The production of antibodies appeared to depend on the absorption of antigen from the uterus.

Further support for this view was obtained from the second experiment in which a sterile extract of *Tr. foetus* was instilled into the uterus. Most cows responded with a definite positive titre.

In the course of this experiment it was also observed that the instillation of extract, in many cases, produced a systemic reaction due to the sensitisation of the animal to the extract. Usually this only occurred after the third dose.

The authors conclude by recording the rapid appearance of agglutinins in the blood of a new-born calf, the cow having a moderately high blood titre. The calf's serum contained no demonstrable agglutinins at birth and before feeding, but 16 hours after having been fed colostrum showed a concentration of agglutinins above that of the maternal serum.

G. D.

[**The Treatment of Bovine Sterility with Lugol's Solution.** Leu, A. (1942.) *Schweiz. Arch. Tierheilk.* **84**. 7 and 8, 263-273, 300-307. (11 figs., num. refs.).]

Animals which are not pregnant six months after calving or which return to the bull three times are regarded as sterile. In approximately 50 per cent. of cases a varying degree of endometritis is the main causative factor, in most cases a sequel to Brucella abortion and Trichomoniasis. Diagnosis is based on vaginal and rectal examinations, particular attention being given to the cervix and its discharges. The degree of cervicitis present is accepted as an index of the state of the endometrium and is a useful guide to prognosis. Old-standing and intractable cases generally show a diffuse cervicitis with thickening of the cervical folds.

The author, using a technique similar to that adopted in this country, injects 50 to 100 c.c. of Lugol's iodine solution (I ; KI ; H_2O : 1 : 2 : 100 :) with the object of increasing the blood supply to the endometrium and stimulating uterine contraction. Irrigation is often followed by a uterine discharge which should clear within five to ten days. Should it persist and the cervix be still inflamed the treatment is repeated.

Of 502 sterile animals examined, 262 were irrigated ; 152 (58 per cent.) became pregnant ; 110 (42 per cent.) remained sterile or were disposed of for other reasons. The conception rate was :—

First oestrus	(6 to 8 days after irrigation)	30	(19·7 per cent.)
Second "	(27 to 29 " ")	53	(34·8 ")
Third "	(48 to 50 " ")	34	(22·3 ")
Later		35	(23·0 ")

Any ovarian disorder encountered received appropriate treatment. In old-standing cases of endometritis the author recommends expression of the corpus luteum, irrespective of whether it is persistent or cyclical, as a routine measure.

It was found that a number of animals came into oestrus after irrigation only to lapse into a state of anoestrus associated with a persistent corpus luteum. Enucleation of the latter resulted in a regular oestrous cycle and in most cases pregnancy followed mating.

The author finds Lugol's solution an excellent remedy for vesicular and granular vaginitis.

C. F.

REPORT

[**Department of Agriculture, Canada.** Report of the Veterinary Director-General for Year ended March 31st, 1943.]

The resignation of Dr. A. E. Cameron, who held the office of Director-General of the Health of Animals Division for a long period of years and who was well known to some members of our profession over here, is announced. During his term of office much progress has taken place in the veterinary affairs of Canada, notably in the eradication of bovine tuberculosis. The elimination of this disease from Canadian herds has followed successfully on the lines adopted in the U.S.A. and the great majority are now free. Tuberculin-testing on a huge scale has been conducted for over 20 years. In the year under review, for example, almost one million animals were tested despite restrictions due to the war. As in the U.S.A. the incidence of the disease is low ; only 1·1 per cent. reactors were encountered during the year. Full compensation is paid for reactors which are slaughtered.

The control of Bang's disease (Brucellosis) is also receiving the active attention of the Division but no details as to procedure are given. The only other diseases recorded are swine fever and rabies : one large outbreak and a few small ones of the former and two outbreaks of the latter are recorded. In the words of the Acting Director (Mr. Barker), " the health of Canadian livestock continues at a high level."

W. K.

ROYAL ARMY VETERINARY CORPS

The following announcements are made in the issue of *The London Gazette* dated February 4th, 1944: Pte. William Gibson Johnston (306157) is granted an Immediate Commission from the Tanks in the rank of Lt., December 15th, 1943.

To be Lts.: George Ronald Bargh, B.Sc. (305215), December 14th, 1943; Basil Gordon Aylward (305861), Basil Smith, B.Sc. (305666), December 22nd, 1943.

* * * * *

Weekly Wisdom

Worse still is the " lock and key " laboratory in which suspicion and distrust reign, and everyone is jealous and fearful lest the other should know of or find out about his work. Thank God! this base and bastard spirit is not much seen, but it is about, and I would earnestly entreat any young man who unwittingly finds himself in a laboratory pervaded with this atmosphere, to get out ere the contagion sinks into his soul.—William Osler: Aequanimitos with other Addresses.

QUESTIONS IN PARLIAMENT

Foot-and-Mouth Disease

Mr. Bernard Taylor asked the Minister of Agriculture, in view of the outbreaks of foot-and-mouth disease, whether he will consider placing a ban on the movement of store and dairy cattle for a period of 14 days when bought in a public market.

The Minister of Agriculture (Mr. R. S. Hudson): I have considered the suggestion very carefully, and am satisfied that it would not be practicable to prohibit the movement of store and dairy cattle for 14 days after their movement from public markets.

Mr. Levy: Is it not the fact that a number of these cases are caused by cattle having to drink at stagnant water, because there is no fresh water for them to drink? What does my hon. Friend propose to do with regard to water supplies for the rural and agricultural areas?

Cows (Tuberculin Test)

Mr. E. P. Smith asked the Minister of Agriculture whether, seeing that when the tuberculin test is made upon any herd the cows will be in various stages of milk production, and in view of the fact that cows in the middle of the milk period are unsaleable, he will consider instituting some reception centres where reactors could be sent by the small T.T. milk producer away from the farm to await their disposal.

Mr. Hudson: No, Sir. The premium of 4d. per gallon now paid to the producer of T.T. milk is intended to cover the extra cost of producing such milk, including losses incurred in the disposal of reacting cows.

Pigs and Poultry

Colonel Carver asked the Minister of Agriculture what prospect there is of stimulating the production of pigs and poultry in this country.

Mr. Hudson: The increased production of pigs and poultry is necessarily dependent upon the amount of cereals that can be made available for use as feeding-stuffs. Such extra supplies as could be foreseen this winter are already being used for the increased rations allowed for pig and poultry breeding stock from January 1st last. I am not in a position to forecast when supplies will enable any further stimulation of production of these classes of stock to take place.

University Grants

Sir E. Grahame-Little asked the Chancellor of the Exchequer whether he can now make a statement as to his intention regarding the forthcoming grant to the universities.

Sir J. Anderson: Yes, Sir. The Government, after considering a report from the University Grants Committee, have decided to maintain the provision for Universities and Colleges in the Estimates for 1944 at its existing level. This provision is, of course, related only to current requirements. The University Grants Committee, which, as my hon. Friend is aware, has just been reconstituted, is now embarking upon an examination of the post-war needs of the Universities.

Dogs (Orders for Destruction)

Major Sir Jocelyn Lucas asked the Attorney-General if his attention has been called to the £1 per day fines imposed on dog owners who do not obey orders to have their dogs destroyed, and whether he will consider some alternative such as confinement to recognised quarantine kennels.

Mr. Hudson: I have been asked to reply. My concern with the class of dogs to which my hon. and gallant Friend refers is limited to animals which are a menace to farm stock. It will, therefore, be necessary to consult other Departments and I will arrange for this to be done.

Sir J. Lucas: Is the Minister aware that what I am concerned about is the fact that the law is being brought into contempt? Is it not time that it was either enforced or modified?

At the recently held centenary celebrations of the Swiss Pharmaceutical Society, Professor Arthur Stoll, D.Sc., M.D., was presented with the Flückiger Gold Medal "in recognition of his outstanding scientific work in pharmaceutical chemistry, especially in the preparation of active principles from vegetable drugs."

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The estimated decline of livestock in enemy-occupied Allied countries as a consequence of lack of feeding-stuffs, requisitioning and slaughter is eleven million cattle, three million horses, twelve million pigs, and eleven million sheep.—*Meat and Wool.*

NOTES AND NEWS

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events

Feb. 23rd.—68th Annual General Meeting of the Eastern Counties Division, N.V.M.A., at Norwich, 2 p.m.
Feb. 23rd.—Meeting of the Derbyshire Division, N.V.M.A., at Sutton Bonington, 2 p.m.
Feb. 24th.—Special Meeting of the Dumfries and Galloway Division, N.V.M.A., at Dumfries, 2 p.m.
Feb. 25th.—Annual General Meeting of the Lancashire Division, N.V.M.A., at Manchester, 2.15 p.m.
Mar. 3rd.—Annual General Meeting of the South Wales Division, N.V.M.A., at Carmarthen, 1.30 p.m.
Mar. 8th.—Meeting of the Editorial Committee, N.V.M.A., 36, Gordon Square, W.C.1 (future meetings also will be held on the *second* Wednesday of the month).
Mar. 8th, 1944.—**Grant of Charter to R.C.V.S., 1884.**
Mar. 29th.—R.C.V.S. Committee Meetings.
Mar. 30th.—**R.C.V.S. Council Meeting.**
April 1st.—R.C.V.S. Annual Fee due.
May 9th.—**R.C.V.S. Council Election.** Last date for receipt of nominations.
May 22nd.—R.C.V.S. Council Election. Voting papers issued.
May 30th.—R.C.V.S. Council Election. Last day for receipt of voting papers.
June 6th.—**R.C.V.S. Annual General Meeting.**
June 7th.—R.C.V.S. Committee Meetings.
June 8th.—**R.C.V.S. Council Meetings.**
June 27th.—R.C.V.S. Examinations begin (provisional date).

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INSTITUTE FOR THE STUDY OF ANIMAL BEHAVIOUR

There have been several recent changes in the Council of the Institute, which has been strengthened by the addition of Dr. E. Hindle, F.R.S., newly appointed Scientific Director of the Zoological Society of London, and of Dr. W. H. Thorpe (Dept. of Zoology, University of Cambridge). Mr. A. N. Worden (Institute of Animal Pathology, University of Cambridge) has succeeded Mr. F. B. Kirkman as Hon. Secretary. Mr. Kirkman has been largely responsible for running the Institute during the difficult period of the war, and remains as Hon. Treasurer. The remaining members of Council are: Dr. E. S. Russell (Chairman), Dr. Julian Huxley F.R.S., Dr. S. Zuckerman F.R.S., Mr. James Fisher, Dr. R. J. Bartlett, and Dr. R. W. B. Douglas.

The Institute hopes to instigate research into various problems, including one suggested by Dr. Geoffrey Lapage (Institute of Animal Pathology, University of Cambridge) which will entail a study of the behaviour of domestic animals in disease.

As pointed out in an editorial in *The Veterinary Record* on August 12th, 1939 (**51**. 977-979), veterinarians are heartily welcome as members of the Institute. The annual subscription is only 12s. 6d. per annum, and includes payment for the ***Bulletin of Animal Behaviour***. Applications should be made to the Hon. Secretary, either at Cambridge or at the Institute's address: c/o Zoological Society of London, Regent's Park, London, N.W.8.

The Institute will participate in the fifth meeting (on "Animal Behaviour") of the Comparative Section, Royal Society of Medicine, symposium on "Limitations and Uses of the Comparative Method in Medicine." This meeting will be held on Wednesday, June 21st, 1944, at 1, Wimpole Street, London, W.1.

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R.C.V.S. OBITUARY

Kerr, Adam, Fernbank, Ellon, Aberdeenshire. Graduated Edinburgh May 25th, 1910. Died February 4th, 1944; aged 70 years.

The Late Lt.-Col. W. S. Mulvey

We regret that the obituary notice of the late Lt.-Col. W. S. Mulvey, of Chelmsford, appearing in our last issue, was inaccurate in the following respects: He did not follow his father at Chelmsford, the latter, Mr. W. J. Mulvey, being in practice in Chelsea (of which he became Mayor) with premises in King's Road and Sidney Street, W.5. Col. Mulvey was with his father until about 1910, when he purchased the Chelmsford practice. The Royal College was represented at the funeral by Dr. Jas. McCunn and not, as stated, by Lt.-Col. J. W. Brittlebank.

IMPROVEMENT OF FARM BUILDINGS

"Visitors from America often remark on the inconvenient layout of most farm buildings in this country," states *The Times* in a recent issue, and continues: "Usually they are at least 70 years old and they may be 200 years old. They were designed at a time when farm labour was cheap and plentiful. To-day they involve unnecessary drudgery and are a handicap to economical production. Some patching is being done even now. But local builders are so busy with priority work for Government departments and they have so few men left that any farmer's hopes of substantial improvements to his farmstead are dissipated by the tax-gatherer before he has an opportunity to put them into effect. Yet, in contrast with most war-time construction, the improvement of farm buildings will be a lasting asset to the country. Many farmhouses also need improvements such as a piped water supply and electric light to make life more pleasant, but the modernisation of farmhouses is not generally such an urgent matter as the repair of existing buildings and the provision of better granaries, cowhouses, and stock yards. Many farms lack adequate sheds for housing expensive tractors and machinery. Thousands of farm workers' cottages need reconditioning."

[As one of the series of N.V.M.A. publications there is shortly to be issued the memorandum of evidence presented by the Association to the Ministry of Agriculture Committee on the general layout and design on farm buildings after the war.—*Editor.*]

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HEALTH SERVICES IN NORTHERN IRELAND

Among the recommendations, covering every phase of the health and medical services in Northern Ireland, made in its recently issued report by the Select Committee on Health Services, the following relate to the veterinary services:—

The centralised slaughtering of all food animals should be continued after the war and these central abattoirs should be in charge of experienced veterinary officers and so ensure that only meat fit for human consumption is passed. The registration of all premises at which poultry are killed and dressed for market by poultry dealers is strongly recommended and periodic inspection of poultry should take place at these registered premises.

There should be one controlling authority to deal with milk production so as to ensure a clean and pure milk supply.

Milk, whether pasteurised or not, must be of good quality and apart altogether from pasteurisation every effort must be made to ensure that there is a pure milk supply for all.

The Committee, of which Mr. Howard Stevenson, F.R.C.S., M.P., was Chairman, recommends that a Ministry of Health should be set up at once which will be the central controlling authority for all health services.

They point out that that does not necessarily mean the creation of an extra Ministry, but, by certain re-grouping of existing Ministries, a Ministry of Health can be evolved without increasing the number of Ministers or Ministries at present in existence.

All the various (human) tuberculosis schemes in Northern Ireland should be co-ordinated by the Ministry, thus ensuring uniformity of treatment and administration throughout the area, and all cases of clinical tuberculosis should be made compulsorily notifiable.

* * * * *

Central Veterinary Society Luncheon.—Attention is drawn in our notices column to the forthcoming luncheon to be held on March 30th by the Central Veterinary Society, in recognition of the work of the Royal College of Veterinary Surgeons during the hundred years of its existence, when the presentation of a gavel will be made.

The remainder of the programme for the current session also is announced. It includes a discussion on "Pasture improvement and alternate husbandry in relation to animal health," when Sir George Stapledon and Mr. A. I. Hosier will be amongst the visiting contributors (March 2nd), while on May 4th an impressive list of speakers will open a discussion on "Livestock shows in relation to animal health."

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Royal Institution Lectures.—In the programme of Friday evening discourses arranged by the Royal Institution is a lecture by E. Rock Carling, F.R.C.S., on "The Medical and Surgical Achievements of Soviet Russia in War," to be held on February 25th. Courses of lectures include a series on fungi (February 22nd, 29th) by Dr. J. Ramsbottom; on the "Mode of Action of Some Vitamins" (March 7th, 14th) by Dr. A. R. Todd; on "Chemical Factors in Nervous Effects" (March 21st, 28th) by Sir Henry Dale, and on "Food, Fads and Fallacies" (February 24th March 2nd, 9th) by Sir Jack Drummond.

A conference has been held between representatives of the N.F.U., National Poultry Farmers' Association and British Poultry Union to consider the long-term policy for the poultry industry. Complete agreement was reached on all principles, and a unified statement is being prepared for submission to the Minister of Agriculture.

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A scheme for the interchange of research personnel between Scotland and England was suggested at an Edinburgh meeting by Dr. George Dunlop, Auchincruive.

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal views of the writer only and must not be taken as expressing the opinion or having received the approval of the N.V.M.A.

Letters to the Editor should reach the Office not later than by the first post on Monday morning for insertion in following Saturday's issue.

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POST-WAR NEEDS OF THE SERVING VETERINARIAN

Sir,—I see from figures in the Supplement to the *Record* that there are 70 members employed by the armed forces in a non-professional capacity, this number including myself and several of my contemporaries. I think I can speak for all, and possibly for those in the Veterinary Corps, too, when I say that we shall be sadly in need of a fairly short, inexpensive and well-planned refresher course before we can take up practice with any degree of confidence. Are the veterinary colleges bearing this in mind in their plans for the future?

I hope also that the demand for veterinarians will remain at a steady level and not fluctuate so fast from minimum to maximum as it has done in the last three years.

Yours faithfully,

ROBERT G. MARES.

Permanent Address:
"Thatchings,"
Harold Wood, Essex.

January 22nd, 1944.

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JOHN HUNTER AND VETERINARY PATHOLOGY

Sir,—The editorial "Pathology and Veterinary Science" in *The Veterinary Record* for January 29th, 1944, reminds us that the first work in English on pathology was the "Morbid Anatomy" of Matthew Baillie, a nephew of the famous John Hunter, who founded our profession. Matthew Baillie studied medicine at Oxford (M.A. June 14th, 1786; M.B. July 15th, 1786; M.D. July 7th, 1789) and spent his vacations working in London under his uncles, John Hunter and his brother Doctor William Hunter, the anatomist of Great Windmill Street. On the death of Dr. William Hunter, Baillie succeeded to the Great Windmill Street premises and continued to lecture in partnership with William Cruikshank, discoverer of the absorbent system of birds. Matthew was appointed a physician to St. George's Hospital, where his uncle John was lecturer in surgery, on February 23rd, 1787, and some of the material of his book, "The Morbid Anatomy of Some of the Most Important Parts of the Human Body," is taken from fatal cases in the wards on which he carried out careful autopsies. But a great deal also is drawn from John Hunter's magnificent collection of specimens and though he died before the book was published, John Hunter undoubtedly fostered its appearance, and very possibly initiated it. The book first appeared in 1793, and other editions appeared in 1796 and 1797 illustrated by a series of excellent plates drawn by William Clift, John Hunter's draughtsman and curator of his museum. In his preface to the first edition, Matthew Baillie explains his reasons for writing the work and remarks "(The bulk) . . . of the stupendous work of the Italian (morbid anatomist) Morgagni 'De Causis et Sedibus Morbis' . . . prevents its possession by practitioners . . . in the present work it is proposed to give simply an account of the morbid changes of structure which take place in the thoracic and abdominal viscera, in the organs of generation . . . and in the brain. From the more attentive examination of morbid structure we shall be able to distinguish between changes which may have some considerable resemblance to each other and which have been generally confounded. This will lead to a more attentive observation of symptoms whilst morbid changes are taking place, and be the means of distinguishing diseases with greater accuracy. . . ." The book is rational and modern in outlook, and its publication is an important milestone in the history of medicine. But in its logic and refusal to go beyond the limit of observed fact its stamp is that of the author's tutor John Hunter.

Another famous pupil of John Hunter, Edward Jenner of small-pox vaccination fame, has left a notebook, published (1931) by the Oxford University Press, which contains interesting records of post-mortems illustrating the morbid anatomy of distemper in dogs and hydatids in sheep. Matthew Baillie was an ardent supporter of Jenner's claims, and they became close friends. Dr. John Baron, Senior Physician to the Gloucester Infirmary, relates: "I had the happiness of seeing them both together in my own house on August 30th, 1821, where they spent the night. Jenner was in pretty good spirits, and I remember he brought in his pocket one of the vertebrae of a horse, to show the nature of the change which takes place in that disease called string halt."

Yours faithfully,

University of Durham, ERNEST GRAY.
Agricultural Department,
King's College, Newcastle-upon-Tyne, 2.
February 7th, 1944.

* * * * *

REACTOR FARMS

Sir,—It is generally admitted that the greatest problem in the eradication of bovine tuberculosis is the disposal of reactors to the "test."

I suggest that a solution would be in the setting up of "reactor farms" where reactors purchased by the Ministry of Agriculture for, say, three-quarters of their market value after passing a clinical examination to eradicate open cases, could be dealt with and disposed of as economically as possible.

1. In-calf cows could be calved and the calves separated from the cows and reared for veal or tested and sold.

2. The cows could then be milked for a lactation, then fattened for beef.

3. The milk could be examined bacteriologically and made into butter or cheese or pasteurised and sold or fed to the calves or, better still, dried and sterilised.

4. Recently calved cows could be milked and then fattened and barren cows fattened.

5. Advanced cases and tuberculous mastitis to be dealt with under the Tuberculosis Order and immediately slaughtered.

These farms could be under the direct supervision of veterinary inspectors of the Ministry of Agriculture and suitably disposed throughout the country. They could be interdependent, one specialising in beef and another in dairying, another in calf rearing. The farms would also give increased facilities for the study of the disease.

I am certain that if a working policy for dealing with reactors were instituted, most farmers would be keen to have their stock tested.

I have been very gratified to hear from several farmers that they refuse to put their reactors on the open market where they may prove a source of grave trouble to some unsuspecting smallholder. It is most heartening to find conscience triumphing over financial consideration amongst the hard headed tillers of the soil and it seems a great pity that the Ministry of Agriculture cannot see its way to do something about the "reactor problem"—especially now, when the farmers seem to be getting "T.B.-minded"—and strike while the iron is hot before their enthusiasm wanes and cynicism supervenes.

Yours faithfully,

1, Orchard Road, J. GRAHAM WILSON.
Newport, Barnstaple.
February 9th, 1944.

* * * * *

QUACK REMEDIES

Sir,—War conditions to-day compel a Government interest and practical support for the animal industry which were lacking in times of peace. Full advantage of this situation should be taken to initiate all possible steps to improve the health of our herds. Consideration of post-war prospects of catastrophic food shortage on a world scale underlines the importance of this task and should end the present toleration of deceptive practices which retard the fight against animal disease.

One such practice is the sale of quack remedies. The spate of advertisements in our farmers' periodicals of so-called cures for all the ills of farm stock is a disgrace to the industry and a challenge to our profession. We have had an abortive discussion on a Draft Bill designed to eliminate unqualified practice in half a century! Why not tackle the very much greater evil of "quack medicines"? What stands in the way of a system of examination and registration along the lines of the scheme in New South Wales with modifications to suit British conditions? Is this not a field for the N.V.M.A.?

Yours faithfully,

249, Milngavie Road. JOHN M. MITCHELL.
Bearsden, Glasgow.
February 7th, 1944.

THE D.V.S.M. COURSE

Sir,—I am interested to see a note from Dr. Wooldridge in the Personal column, with reference to the D.V.S.M. course given at Manchester University. I regret that his correction is still not strictly accurate, in that William Woods really had nothing to do with the foundation of this Diploma.

The inner history may be of some interest to the profession. Early in 1904 I met a small Committee of the R.C.V.S. and asked them to consider (1) the establishment of a Post-Graduate Diploma in Public Health; (2) taking powers for examining lay meat inspectors in meat and food inspection and if necessary granting certificates.

Briefly, my two proposals met with little support and I then approached Professor Delépine, with whom I was so closely associated and who was ever a great supporter and believer in the veterinary profession, whose services he considered to be absolutely essential to the Public Health Service.

Delépine immediately agreed to do what he could and indeed to him must go all the credit for success. I had the minor part, of looking after the correspondence, which entailed enquiries of every university and veterinary school in the civilised world.

When the project was launched a committee of the university was formed to investigate and report, and after a number of meetings their support of the proposal was unanimous. But now a difficulty arose about finance and it seemed that we had reached a deadlock when that great public-spirited Mancunian, Sir Edward Donner, stepped into the breach and said if this course were deemed to be necessary he would defray all expenses.

We were now well away and the next point was to appoint a Lecturer in Veterinary Hygiene.

I called together a few of the prominent practitioners in the City—W. A. Taylor, Sam Locke, John Wolstenholme, Tedbar Hopkin—and it was decided that there could be no doubt that William Woods of Wigan was our man. Having coached Woods what we were coming for we went on a deputation to Wigan to ask him to accept nomination.

The subsequent history is written for all to see, but no man ever fulfilled a task more earnestly and honestly than did Woods, on whom the University conferred the M.Sc.

I must add that this course had no greater supporter than the late Professor Topley, whose friendship and kindly help were very dear to many of us and who was not very long before he appointed a veterinary surgeon on his staff.

Yours faithfully,

Wimborne House. J. W. BRITTLEBANK.
Sawbridgeworth, Herts.
February 14th, 1944.

DISEASES OF ANIMALS ACTS, 1894 TO 1937, AND AGRICULTURE ACT, 1937 (PART IV).

Summary of Returns of Confirmed Outbreaks of Scheduled (Notifiable) Diseases

Period	Anthrax	Foot-and-mouth	Parasitic Mange*	Sheep Scab	Swine Fever
Jan. 16th to 31st, 1944 ...	12	2	2	12	27
Corresponding period in—					
1943 ...	14	1	—	19	28
1942 ...	18	—	1	16	28
1941 ...	27	29	2	23	110
Total Jan. 1st to Jan. 31, 1944	24	3	3	34	48
Corresponding period in—					
1943 ...	28	8	—	28	41
1942 ...	30	—	3	47	42
1941 ...	52	51	2	45	250

NOTE.—The figures for the current year are approximate only.
* Excluding outbreaks in Army Horses.

Tuberculosis (Attested Herds) Schemes

The number of Attested Herds, *i.e.*, herds officially certified as free from Tuberculosis as at January 31st, 1944, was as follows:—

England	Wales	Scotland	Total (Great Britain)
3,970	8,613	3,514	16,097